

U.S. Route 1 Corridor Study

Brunswick

Prepared By

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Bureau of Planning

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Preliminary Internal Draft

Unsignalized	Minor Street				Major Street (Left)				Overall Delay
Intersection	EB		WB		SB		NB		
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	
M1. Diamond Merge									
Rt 1 and Range Rd*	6.2	A	-	-	-	-	NA	NA	1.6
Rt 1 and McDonalds*	>100	F	-	-	-	-	NA	NA	12.7
Rt 1 and Amatos*	>100	F	-	-	-	-	NA	NA	10.4
Rt 1 and Mill Rd.	23.3	C	-	-	-	-	9.5	A	3.7
Pleasant and Stanwood	26.5	D	6.6	A	6.2	A	32.5	D	24.2
Rt 1 and Sage St	The intersection no longer exists in this alternative.								
Rt 1 and Cumberland	The intersection no longer exists in this alternative.								
Rt 1 and Cushing	The intersection no longer exists in this alternative.								
Pt-1. Southbound Left Turn									
Rt 1 NB off ramp and Maine St	8.3	A	-	-	-	-	-	-	2.2
Rt 1 SB off ramp and Maine St (NB traffic)	-	-	14.6	B	-	-	-	-	3.2
Maine St and Cabot St	65.6	F	-	-	-	-	7.2	A	6.9
Maine St and Mason St	-	-	>100	F	25.8	D	-	-	90.5
M2. LT Pockets Merge									
Rt 1 and Range Rd*	31.9	D	-	-	-	-	7.2	A	1.2
Rt 1 and McDonalds*	58.0	F	-	-	-	-	31.5	D	4.6
Rt 1 and Amatos*	>100	F	-	-	-	-	18.0	C	3.3
Rt 1 and Sage St	-	-	2.4	A	1.4	A	-	-	1.3
Rt 1 and Cumberland	-	-	44.1	E	18.1	C	-	-	2.3
Rt 1 and Mill Rd.	7.6	A	-	-	-	-	12.2	B	1.9
Rt 1 and Cushing	-	-	12.7	B	-	-	-	-	2.4
Pt-1. Southbound Left Turn									
Rt 1 NB off ramp and Maine St	10.3	B	-	-	-	-	-	-	2.4
Rt 1 SB off ramp and Maine St (NB traffic)	-	-	18.1	C	-	-	-	-	3.4
Maine St and Cabot St	>100	F	-	-	-	-	5.6	A	11.9
Maine St and Mason St	-	-	>100	F	26.2	D	-	-	76.7

Intersection	EB		WB		SB		NB		Overall	
Signalized	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
M1. Diamond Merge										
Route 1 and Church St *	42.1	D	76.0	E	25.7	C	50.4	D	44.8	D
Route 1 and River Rd *	>100	F	70.1	E	36.5	D	21.6	C	50.5	D
Route 1 and Stanwood Ave	The intersection is no longer signalized in this alternative.									
Rt 1 SB off ramp and Maine St (SB traffic)	-	-	29.7	C	1.9	A	8.4	A	7.6	A
M2. LT Pockets Merge										
Route 1 and Church St *	-	-	32.3	C	10.0	A	23.6	C	20.0	B
Route 1 and River Rd *	61.0	E	24.8	C	20.8	C	53.4	D	39.9	D
Route 1 and Stanwood Ave*	-	-	59.3	E	5.3	A	51.2	D	35.0	C
Rt 1 SB off ramp and Maine St (SB traffic)	-	-	27.4	C	1.9	A	7.2	A	6.8	A

* Rt 1 is considered NB / SB traffic.

I. Introduction

The quality of travel along the U.S Route 1 corridor has, over the years, steadily deteriorated to the point where significant congestion is being experienced during the peak travel periods, especially during the summer months. This situation has resulted, in part, from a steady growth in tourism and industrial, commercial, and residential development occurring in southern Maine.

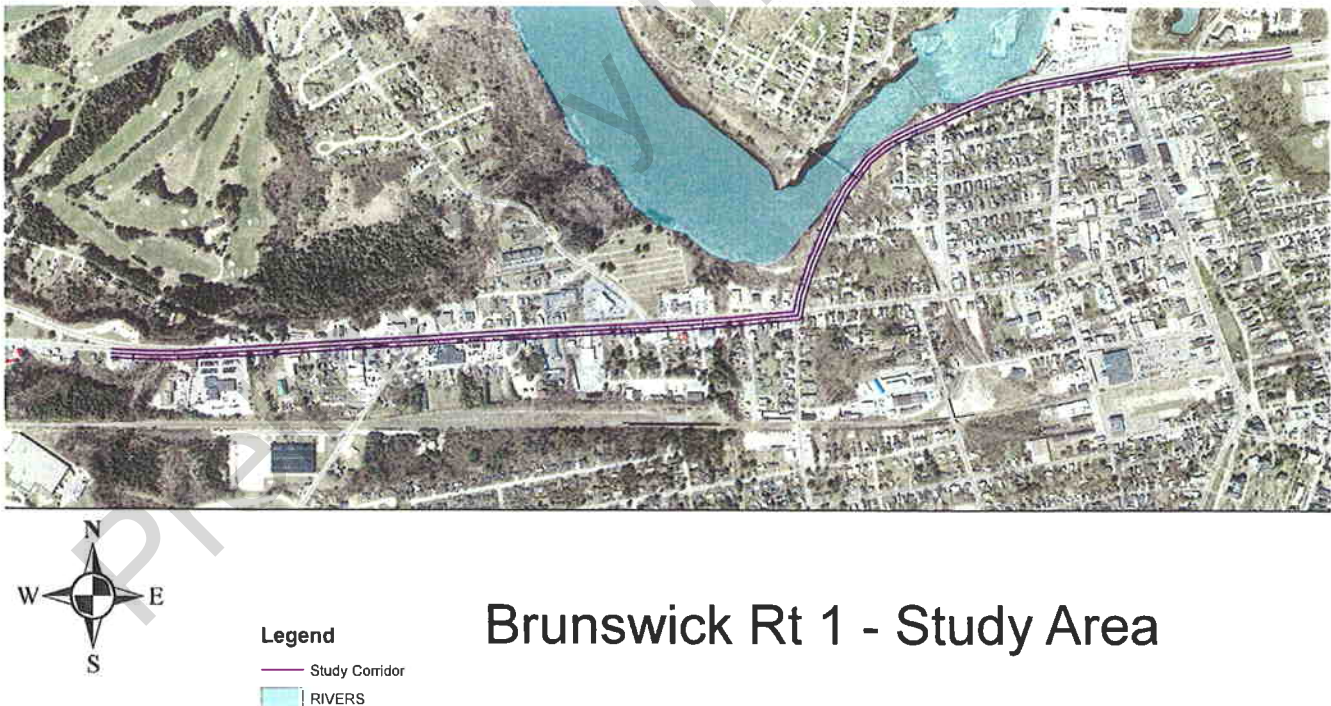
Representatives from the town of Brunswick asked the Department to review traffic congestion issues along U.S. Route 1. As a result, a Planning Study was recommended to review current and future travel demands.

This study focuses on a 2-mile segment of U.S. Route 1 in Brunswick. As shown in Figure 1, this corridor extends from the I-295 Connector Intersection with Route 1 to the Maine St. interchange in the east.

The primary objective of this Planning Study is to assess existing (base) traffic and roadway conditions along the U.S. Route 1 corridor to identify existing deficiencies relative to mobility, safety, physical conditions and roadway geometrics; to estimate travel demand conditions for the year 2027 based on historical traffic data; and to identify potential future roadway deficiencies.

This report deals with analyzing existing conditions, the identification of existing system deficiencies, an analysis of future (2027) conditions and potential improvement alternatives.

Figure 1. Study Area



II. Existing Conditions

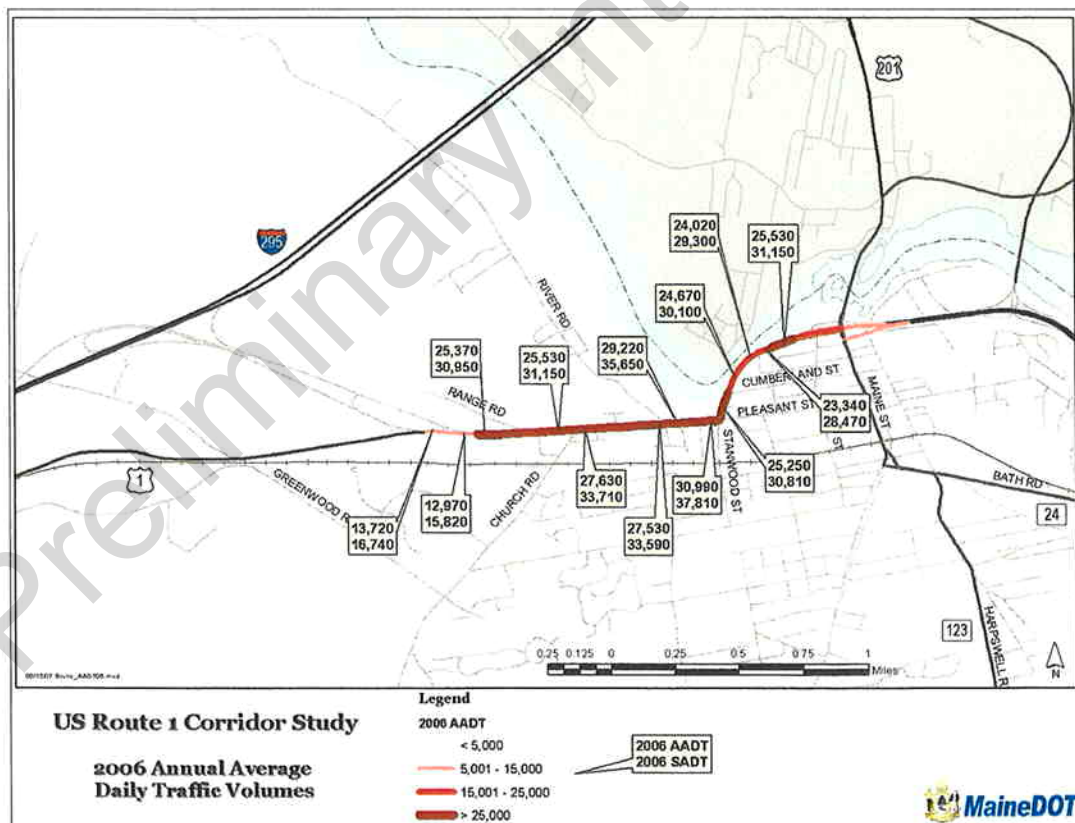
A comprehensive analysis of the performance of the Route 1 corridor has been undertaken to identify roadway geometric, safety, and traffic operational deficiencies. This evaluation required the development of a comprehensive inventory of existing conditions relative to traffic volume and composition, travel speeds, level of service, physical conditions, roadway geometrics, crash history and existing environmental considerations.

A. Traffic Volumes

Daily Traffic Flows

Traffic volume counts obtained in the corridor Study Area during late July of 2006 are depicted in **Figure 2**. The volumes shown have been adjusted to represent the annual average daily traffic (AADT). Daily volumes will be somewhat higher than AADT in summer and somewhat lower in winter. As shown in this figure, traffic volumes within the study area vary ranging from a low of 23340 vehicles per day at a point on Mill St (Route 1) west of Cushing St to a high of 30990 vehicles per day at a point on Pleasant St (Route 1) west of Stanwood St.

Figure 2. Daily Traffic Volumes



Seasonal and Daily Variation

Using data provided by the Department's Seasonal Variation records for 2006, an analysis of Route 1 traffic flow variations was made using Group II Arterial data. These typical seasonal (weekly) and hourly variations in traffic flow along the Route 1 corridor are shown in Figures 3 and 4.

Figure 3, which shows the weekly variation in the annual average daily traffic for the year 2006, clearly shows the seasonal nature of traffic along the Route 1 corridor. Due primarily to the recreational and tourist activity in the region, the months of May, June, July, August, September, and October experience greater than normal traffic volumes as volumes in July reach levels of approximately 120 -130 percent of the average annual daily traffic. During the "off-season" months, such as January and February, volumes decrease to a level of approximately 85 percent of the average annual daily traffic.

Figure 3. Seasonal Traffic Variation

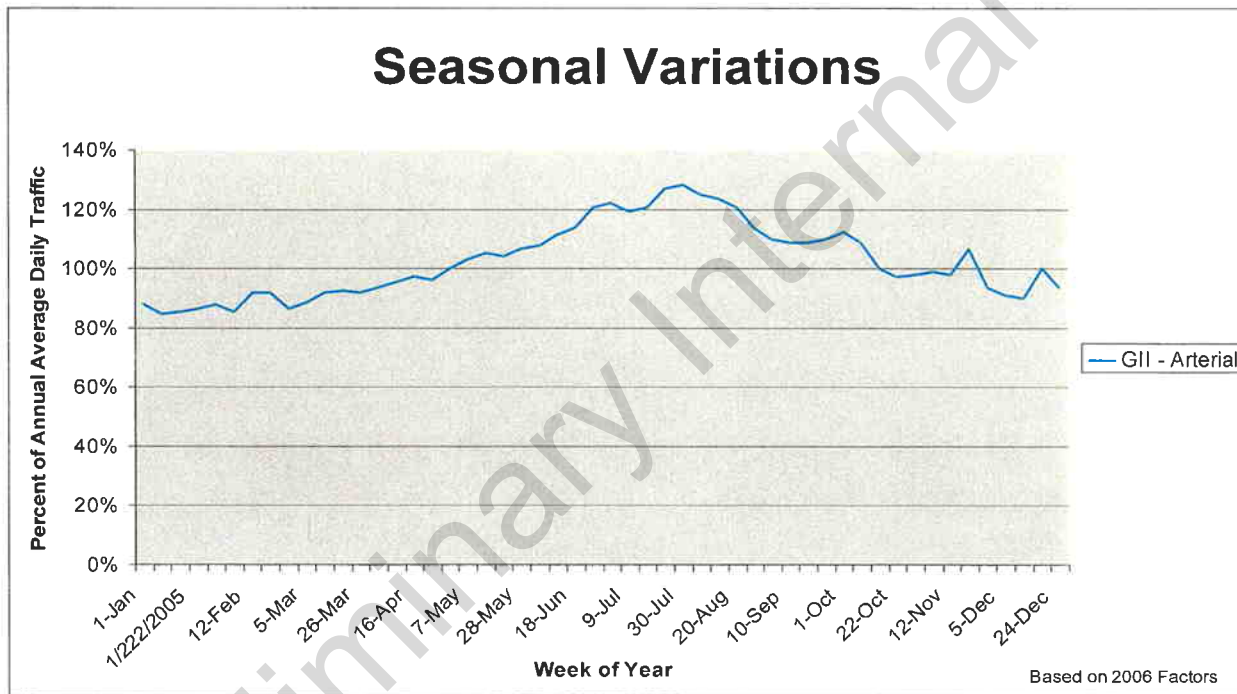
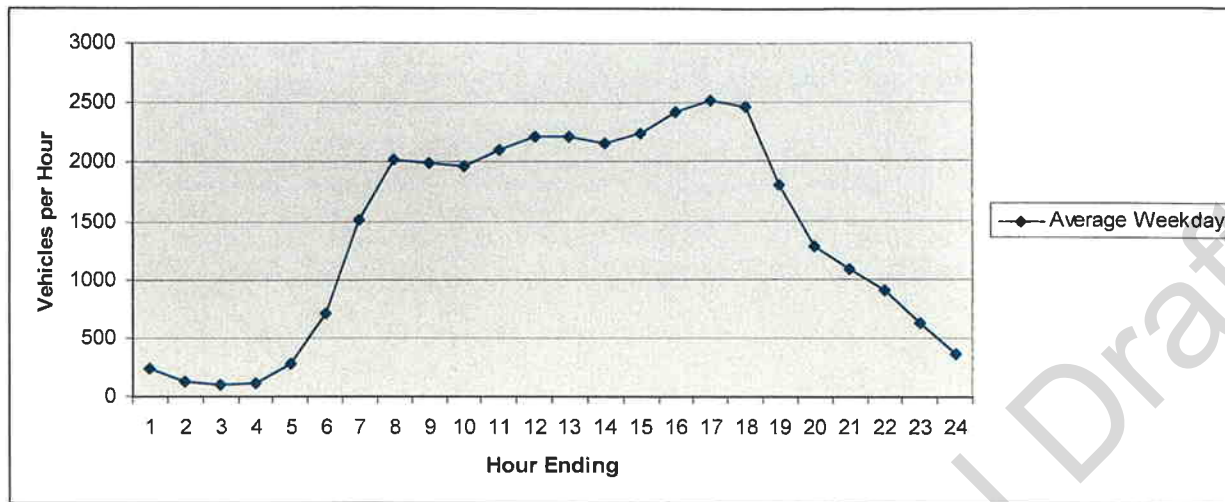


Figure 4 shows the variation of traffic volume by hours of the day during an average peak summer period. Typically, hourly traffic volumes would show peak periods of travel during the morning and in the evening when work related trips generally take place. Hourly traffic volumes along the Route 1 corridor do not exhibit this typical distribution. Due primarily to the large component of seasonal recreational activities, volumes tend to steadily increase from 6 am to 6 pm at which time traffic volumes tend to drop off. The highest level of traffic occurs during the 3 pm to 5 pm time period. After 7 pm volumes begin to decrease and reach a low at 4 or 5 am.

Figure 4. Hourly Traffic Variation



Intersection Turning Movement Volumes

Vehicle turning movement counts were conducted in July of 2006 at several major intersections along the corridor. These counts were conducted from 6:00 AM to 6:00 PM. The intersections where these counts were made are as follows:

- Pleasant St (Route 1) and Church St.
- Pleasant St (Route 1) and McDonalds entrance
- Pleasant St (Route 1) and Amato's entrance
- Pleasant St (Route 1) and River Rd.
- Pleasant St (Route 1) and Stanwood St.
- Mill St (Route 1) and Cumberland St.
- Mill St (Route 1) and Mill Rd (single lane RR Bridge)
- Mill St (Route 1) and Cushing St.
- Mill St (Route 1) and Maine St. Eastbound Off Ramp
- Mill St (Route 1) and Maine St Westbound On Ramp
- Route 1 and Maine St Westbound Off Ramp
- Mason St (Eastbound On Ramp) and Route 1
- Maine St and Cabot St

The peak hour turning volumes and the time they occurred of the intersections identified above are shown in [Appendix 1. GET e-copies of turn sheets...](#)

Traffic Composition

Two factors which have a significant influence on the traffic carrying capacity of a highway facility is the mix of vehicles in the traffic stream, specifically the percentage of heavy trucks (a heavy truck is defined as any vehicle with 6 or more tires touching the pavement), and the directional distribution or the proportion of vehicles traveling in one direction as opposed to its opposite direction. The following table summarizes the results.

Table 1. Traffic Composition and Directional Distribution

Location	Year	AADT	Peak Hour Volume	% Heavy Trucks of AADT	Directional Distribution	% Heavy Trucks in High Hour
W/O Rt 1 and Church St. Int.	2006	25530	2454	2.10	52% SB (Rt 1)	1.30
E/O Rt 1 and Church St. Int.	2006	27750	2395	4.70	57% SB (Rt 1)	1.38
W/O Rt 1 and River Rd	2006	27580	2458	6.57	58% SB (Rt 1)	2.77
E/O Rt 1 and River Rd	2006	29220	2713	6.21	55% SB (Rt 1)	2.43
W/O Rt 1 and Stanwood Ave	2006	30990	2765	5.81	55% SB (Rt 1)	1.99
N/O Rt 1 and Stanwood Ave	2006	25380	2197	6.86	52% SB (Rt 1)	2.37
SW/O Rt 1 and RR Bridge	2006	24740	2217	4.25	54% SB (Rt 1)	1.67
NE/O Rt 1 and RR Bridge	2006	24020	2132	4.38	55% SB (Rt 1)	1.74
W/O Rt 1 and Cushing St	2006	23340	N/A	4.61	N/A	7.69
E/O Rt 1 and Cushing St	2006	25530	N/A	2.64	N/A	1.94
Rt 1 NB Off Ramp to Maine St	2006	1500	120	5.09	100% NB (Rt 1)	0.83
Mason St	2006	8520	696	5.22	74% NB	3.02
Rt 1 SB On Ramp from Maine St	2006	5320	370	7.41	100 % SB (Rt 1)	3.51
Rt 1 SB Off Ramp to Maine St	2006	5320	344	2.70	100% SB (Rt 1)	2.62

Historical Traffic Growth

Table 2 shows 25 years of historical growth in traffic at selected locations along Route 1.

In recent years (1997 to 2007), overall corridor growth has somewhat leveled off, and in some locations declined. We would like to note at this point that significant construction has taken place in the area. One large factor in the decline of traffic growth is the bypass which was built in 1997. The bypass did relieve some congestion; however, new and proposed economic growth in Brunswick is bringing additional traffic to downtown.

Based on this review, the traffic on Pleasant St and Mill St, from the I-295 Connector Intersection with Route 1 to the Maine St. interchange in the east is expected to grow by about 1 percent per year.

Table 2. Historical Traffic Volume Data

Location	AADT 81	AADT 82	AADT 83	AADT8 6	AADT 87	AADT 90	AADT 92	AADT 95	AADT 97	AADT 98	AADT 00	AADT 02	AADT 05	AADT 06
US 1 (PLEASANT ST) E/O I- 295 ON RAMP @CUL	14350			19140		20470	21460	28050	25260		25140			
US 1 (PLEASANT ST) W/O CHURCH RD			17790	18950					25760	27440	27460	28050	25580	25530
US 1 (PLEASANT ST) E/O CHURCH RD				20850				27080					25170	27630
US 1 (PLEASANT ST) W/O RIVER RD				21970					28340		29410		27030	27530
US 1 (PLEASANT ST) E/O WEBSTER ST								33300						29220
US 1 (PLEASANT ST) W/O SUMMER ST											34160	41990	28470	
US 1 (PLEASANT ST) W/O STANWOOD ST		20840	24190	24230	29080			33680					29070	30990
US 1 (MILL ST) N/O PLEASANT ST		14070	19620					26900						25250
US 1 (MILL ST) NE/O CUMBERLAND ST											27920	28000	27640	24670
US 1 (MILL ST) E/O CUSHING ST		16390				26060	26200	27340			31560	27670	27730	25530
US 1 (EB) W/O EB ON RAMP TO SR 196										14800	14960	15630	14310	
SR 24/US 201 (MAINE ST) @ TOPSHAM TL	22480	21295		26460		30340	29150	27840	30610	18850	19140	17620	19080	18940
SR 24 (MAINE ST) N/O CENTER ST			17130								18810			17030

B. Existing Conditions Inventory

Federal Classification

Route 1 within the study area has been assigned the functional classification of “principal arterial”. It is an Urban Street, Class II road with an Intermediate Design Category.

Roadway Geometrics

Appendix 2 presents a segment-by-segment inventory of existing roadway geometric and operating conditions for the Route 1 corridor study area. The following elements are included in the appendix:

- Begin and end node descriptions
- Begin and end node numbers
- Begin and end miles along the corridor
- Segment length (miles)
- Posted speed
- Shoulder type and width
- Number of lanes
- Number of through lanes and widths
- Number of right and left turning lanes and widths
- Pavement condition rating

In general, the pavement width along the corridor averages 48 feet with very little (if any) widening at intersections to provide exclusive left and right turn lanes.

Route 1 is rated “good” (3.57 to 4.96) for its entire length within the study area indicating the pavement is new or nearly new and exhibits few, if any, visible signs of surface deterioration. The ratings are displayed in Figure 5.

Safety

Crash data for the years 2002 through 2004 were used in identifying high crash locations (HCLs) in the study area. An HCL is a location which has eight (8) or more traffic crashes and a Critical Rate Factor (CRF) greater than 1.00 in a three-year period. A highway location with a CRF greater than 1.00 has a frequency of crashes that is significantly greater than the statewide average for similar locations.

Based on the results of the crash research, six locations (2 intersections and 4 roadway segments) within the study area meet the criteria for placement on MDOT’s list of High Crash Locations. Figure 6 presents a summary of each of the six HCL’s with the number of crashes experienced and their CRF’s. Table 3 shows the locations and severity of crashes in the study area. Collision diagrams for the locations are shown in Appendix 3.

Figure 5. Pavement Condition Rating

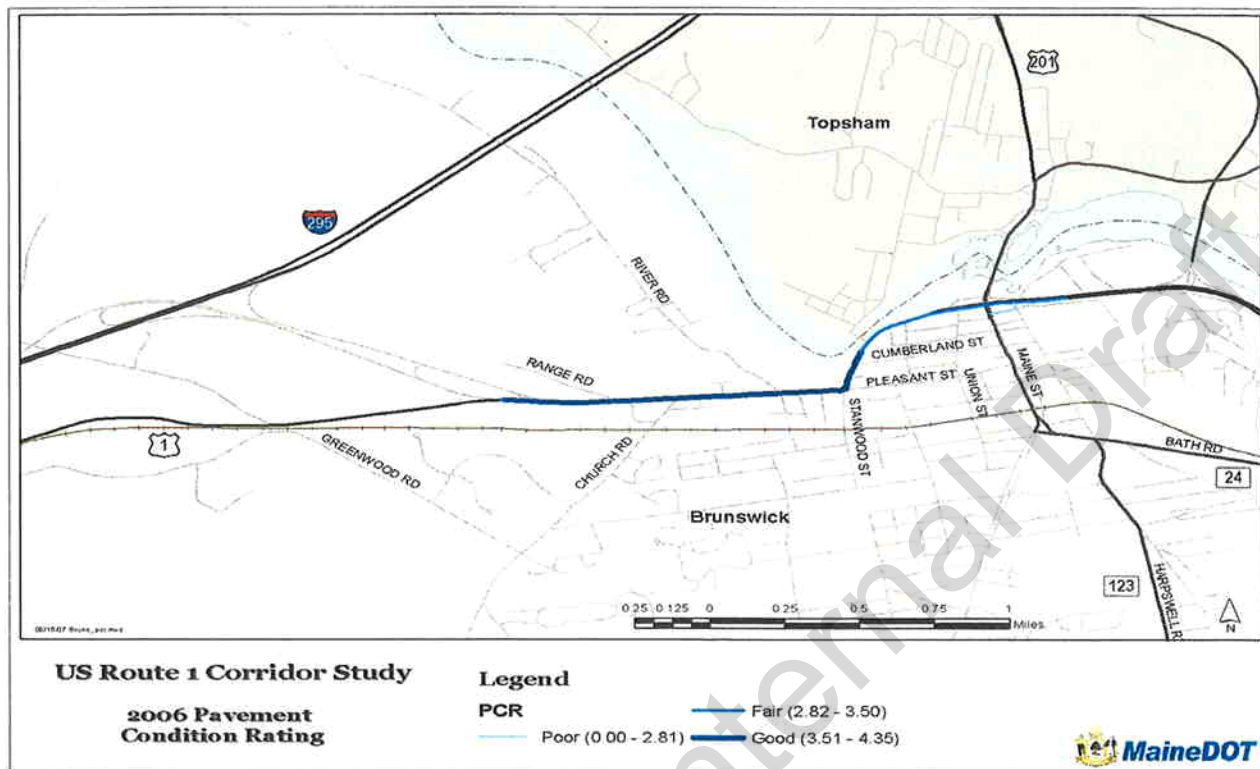


Figure 6. High Crash Locations

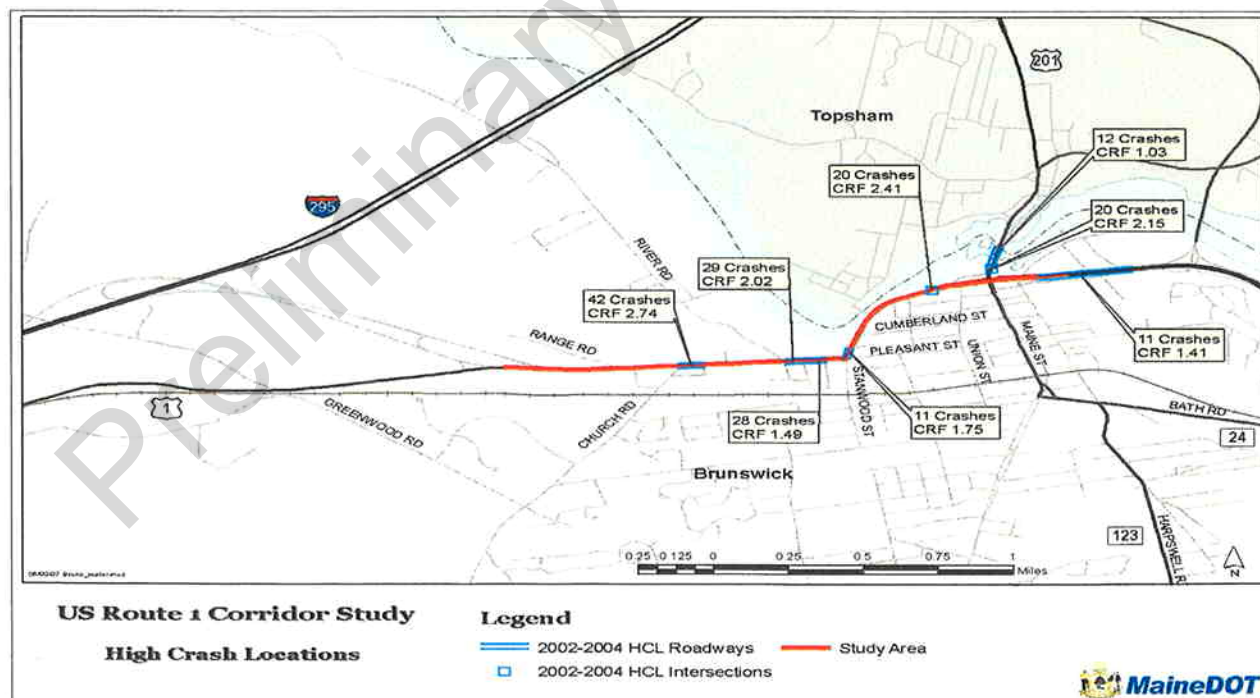


Table 3. High Crash Locations

High Crash Location and Severity, 2002 - 2004

Location on Route 1		Total Crashes	Severity					Percent Injury	CRF
Intersection	Road Segment		K	A	B	C	PDO		
Cushing St		15	0	1	1	4	9	40.0	1.41
US 1 SB On Ramp from Maine St		21	0	0	1	4	16	23.8	2.55
	Church St to Lavallee St.	41	0	0	3	4	34	17.1	2.67
	Webster St to Lombard St.	28	0	0	3	2	23	17.9	1.95
	Lombard St to Summer St.	30	0	3	2	4	21	30.0	1.6
	Stanwood Ave to Sage Hill Rd	11	0	0	1	3	7	36.4	1.75

K - Fatality

C - Possible Injury

A - Incapacitating Injury

PDO - Property Damage Only

B - Non-incapacitating Injury

C. Mobility and Operating Conditions

Travel Speeds

Travel speed runs were conducted along Route 1 within the study area in July 2006. Forty one runs were made in both the northbound and southbound direction. Average calculated speeds for each section of roadway, as well as the posted speeds, are shown in Table 4. **These speeds are the collective average of speeds calculated from the forty one speed – delay runs that were done.**

Analysis of this data indicates that the lowest overall average travel speeds in the corridor were experienced in the northbound direction where, due to delays caused by traffic congestion and pedestrian movements, speeds of approximately 7 to 16 mph were encountered during the peak hour. Higher vehicle speeds were recorded on segments that have fewer commercial businesses or side roads to residential neighborhood.

Table 4. Average Corridor Travel Speeds

Average Corridor Travel Speeds			
Begin Description	End Description	Direction	Avg Travel Speed (mph)
Rte 1 Divider (CUL Sign)	Range Road	NB	38.4
Range Road	Church Road	NB	20.1
Church Road	River Road	NB	17.3
River Road	Pleasant & Mill & Stanwood	NB	12.6
Pleasant & Mill & Stanwood	Cumberland St	NB	22.9
Cumberland St	Cushing St	NB	31.6

Cushing St	Off/ON Ramp Overhead sign	NB	32.8
Off/ON Ramp Overhead sign	Cushing St	SB	21.1
Cushing St	Cumberland St	SB	21.2
Cumberland St	Pleasant & Mill & Stanwood	SB	18.2
Pleasant & Mill & Stanwood	River Road	SB	20.8
River Road	Church Road	SB	24.0
Church Road	Range Road	SB	32.2
Range Road	Rte 1 Divider (CUL Sign)	SB	40.9

NB = northbound

SB = southbound

Level of Service (LOS)

One of the elements of this study is the evaluation of operating conditions along the corridor relative to existing and future traffic mobility. To assess quality of flow, capacity analyses were conducted for intersections and roadway links within the study area using the procedures documented in the *2000 Highway Capacity Manual* (HCM).

Capacity is defined as the “maximum sustainable flow rate at which vehicles or persons reasonable can be expected to traverse a point or uniform segment of a lane or roadway during a specific time period under given roadway, geometric, traffic, environmental, and control conditions”. Conditions or factors that affect capacity include the number of travel lanes, lane and shoulder width, lateral clearances, alignment, the characteristics of vehicles in the traffic stream, and traffic control and regulations in existence.

The LOS concept is a qualitative measure describing operational conditions within a traffic stream taking into account a number of variables such as speed and travel time, vehicles maneuverability, traffic interruptions, comfort, and convenience. There are six levels of service defined in the manual ranging from LOS “A” to LOC “F”, with LOS “A” representing free flow conditions and LOS “E” and “F” representing conditions where a roadway is operating at capacity or failing.

Roadway

For analysis purposes the HCM classifies roadway segments into the following three categories based on roadway type and function.

- Urban Streets (Class I, II, III, IV)
- Multi-Lane Highways
- Rural Two-Lane Highways (Class I and II)

The urban street level of service is based on travel speed, running time, and intersection control delay. The multilane highway LOS is based on density, average travel speed, and v/c ratio. On the two lane highways, LOS criteria are percent time-spent-following and average travel speed.

Typical Roadway LOS is based on sections of road no shorter than one mile. The following 7 section breakdown occurs over a 1.63 mile of road. This road section is classified as Principal Arterial Class II (Design Category - Intermediate). In order to determine LOS, the corridor was divided into 7 sections for analysis purposes. The results are summarized in the Table 5, which identifies each segment and its associated LOS for the Peak Hour.

Table 5. LOS: Roadway Segments - Existing Conditions (2006)

From	To	Section Mileage (miles)	Posted Speed (mph)	Avg. Travel Speed NB (mph)	NB from SD runs	LOS NB	Avg. Travel Speed SB (mph)	SB from SD runs	LOS SB	Unsignalized Intersections
Rt 1 Divider (CUL Sign)	Range Road	0.225	35	41	44.22	A	42	42.60	A	
Range Road	Church Road	0.210	35	16	15.90	E	32	33.50	B	
Church Road	River Road	0.350	35	7.23	6.38	F	21.94	21.80	D	
River Road	Mill & Stanwood	0.220	35	9	11.80	F	15	17.40	E	
Mill & Stanwood	Cumberland St	0.115	35	21.87	19.70	D	13.47	15.30	E	
Cumberland St	Cushing St	0.255	35	26.65	25.50	C	16.70	14.40	E	
Cushing St	Off/ON Ramp Overhead sign	0.130	35	27	28.60	C	19	11.70	D	Actual levels of service
	Total Miles	1.505								

ice for unsignalized intersections are determined by computed or measured control delay. LOS is defined for each minor movement and not for the intersection as a whole. Control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue to the time the vehicle departs from the stop line. LOS ranges are shown in Table 6:

Table 6. LOS Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (s/veh)
A	0-10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50

As Table 7 indicates, many of the unsignalized intersections have approaches that currently operate at or over capacity based on the project criteria.

Table 7. LOS: Unsignalized Intersections - Existing Conditions (2006)

	Minor Street				Major Street (Left)				
Intersection	EB		WB		SB		NB		
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Overall Delay
Rt 1 and Range Rd*	8.5	A	-	-	-	-	7.3	A	2.9
Rt 1 and McDonalds*	11.1	B	-	-	-	-	9.3	A	2.9
Rt 1 and Amatos*	12.8	B	-	-	-	-	17.4	C	3.1
Rt 1 and Sage St.	-	-	58.8	F	-	-	-	-	4.7
Rt 1 and Cumberland St	-	-	>100	F	31.3	D	-	-	6.8
Rt 1 and Mill Rd	30.7	D	-	-	-	-	17.9	C	5.5
Rt 1 and Cushing St**	-	-	77.3	F	18.1	C	-	-	8.5
Maine St and Mason St	-	-	18.8	C	11.5	B	-	-	5.5
Rt 1 NB off ramp and Maine St	5.4	A	-	-	-	-	-	-	1.3
Rt 1 SB on ramp and Maine St	-	-	-	-	-	-	4.5	A	2
Rt 1 SB off ramp and Maine St	-	-	13.8	B	-	-	-	-	2.9
Maine St and Cabot St	>100	F	-	-	-	-	0.5	A	15.8

* EB represents Range Rd, McDonalds Entrance & Amatos Entrance

** WB represents Cushing St.

Due to the operating conditions and High Crash location found at and near the intersection of Pleasant St and the McDonalds Restaurant an analysis was undertaken to determine if traffic signal installation was warranted for further consideration as a possible improvement to these locations. The Manual on Uniform Traffic Control Devices (MUTCD) provides 8 conditions for which traffic signal control may be warranted for an intersection. One or more of these warrants should be met before a signal is installed. The signal warrants analysis was based on average day and summer peak volumes.

The analysis indicated that four of the eight warrants were not applicable. The remaining four warrants did not meet the criteria necessary to justify the installation of a signal. Due to the comparably low volume of traffic utilizing the Minor road (restaurant entrance), the majority of the warrants do not meet or exceed the volume necessary to satisfy the warrant requirements.

Signalized Intersections

Level of service for signalized intersections is evaluated in terms on control delay per vehicle. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and fine acceleration delay. The LOS criteria for signalized intersections are somewhat different from the criteria for

unsignalized intersections. A signal intersection is designed to carry higher traffic volumes and experience greater delay. The following table shows the level of service criteria:

Table 10. LOS Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (s/veh)
A	≤10
B	>10-20
C	>20-35
D	>35-55
E	>55-80
F	>80

Intersection operations along the Route 1 corridor are based on current geometry and observed signal timing and phasing. Levels of service analyses were conducted at three signalized intersections within the study area. The results of the intersection analysis under 2006 design hour traffic volume conditions are summarized in Table 11 and shown graphically in Figures 11 through 13.

The Route 1 / Stanwood Ave intersection has approaches that operate at or over capacity, under current design hour conditions.

Table 11. LOS: Signalized Intersections - Existing Conditions (2006)

Intersection	EB		WB		SB		NB		Overall	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Route 1 and Church St	25.8	C	18.19	B	-	-	26.4	C	23	C
Route 1 and River Rd	66.3	E	21.5	C	46.2	D	41.3	D	45.1	D
Route 1 and Stanwood Ave	47.2	D	-	-	11.3	B	66.6	E	35.7	D

D. Alternative Transportation Facilities

Park and Ride

No Park & Ride facilities are provided on Route 1 in the study area. The closest Park & Ride facility is located across the Androscoggin River in Topsham.

Passenger Rail Service

There is no current passenger service connected to Brunswick. However, there is discussion to extend Amtrak service from Portland to Brunswick at some time in the future.

Bicycle Facilities

There are no designated bike routes along the Route 1 corridor in the study area. Currently bicyclists use the existing shoulder on Route 1.

E. Existing Environmental Conditions

This section discusses the environmental and cultural resource constraints within the study area that could affect the feasibility of alternatives. Constraints studied include wetlands and surface water resources; public drinking water supplies; floodplains; threatened and endangered species; historic and archaeological resources; Section 4(f) and Section 6(f) lands. These areas are depicted in Figures 7 through 9.

Figure 7. Water Resources

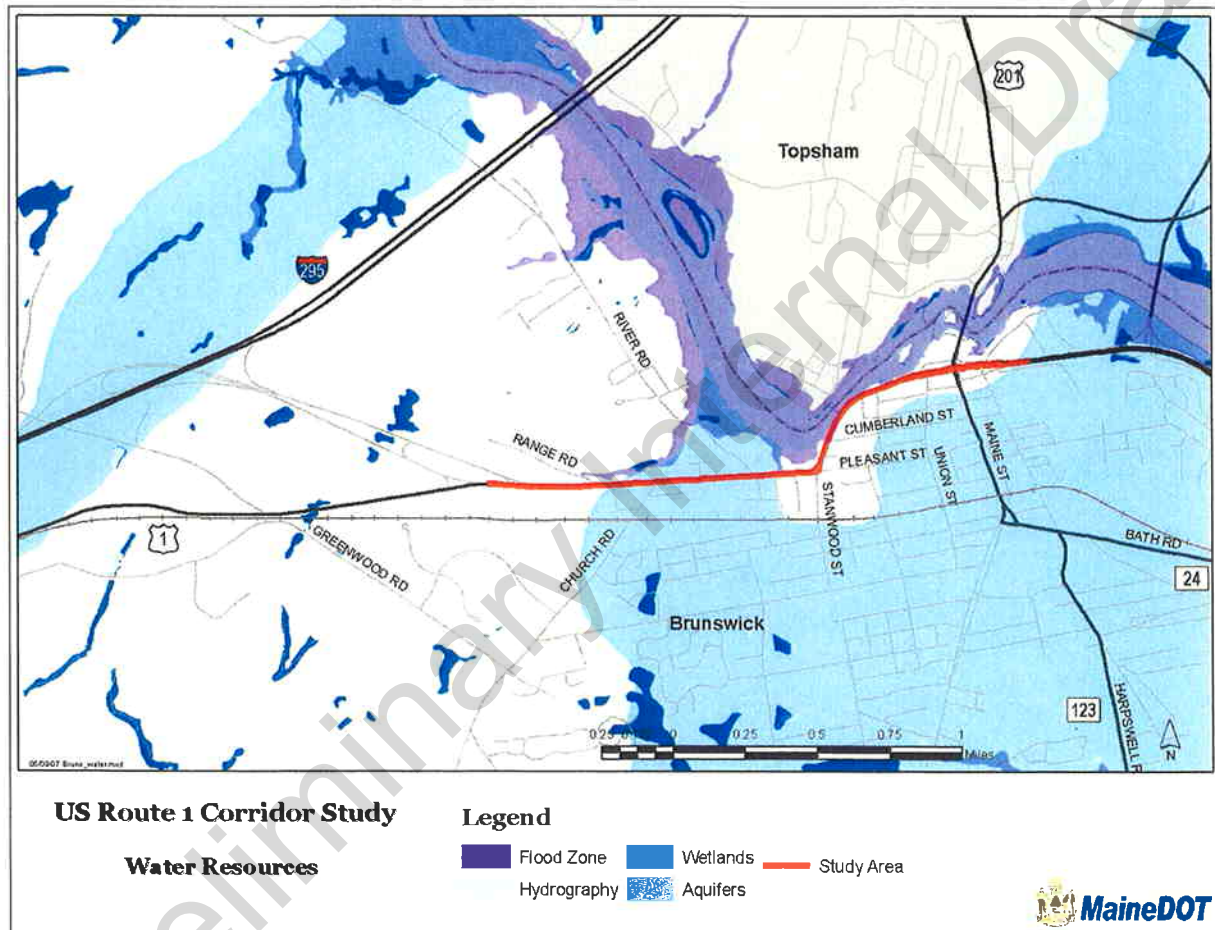


Figure 8. Wildlife Resources

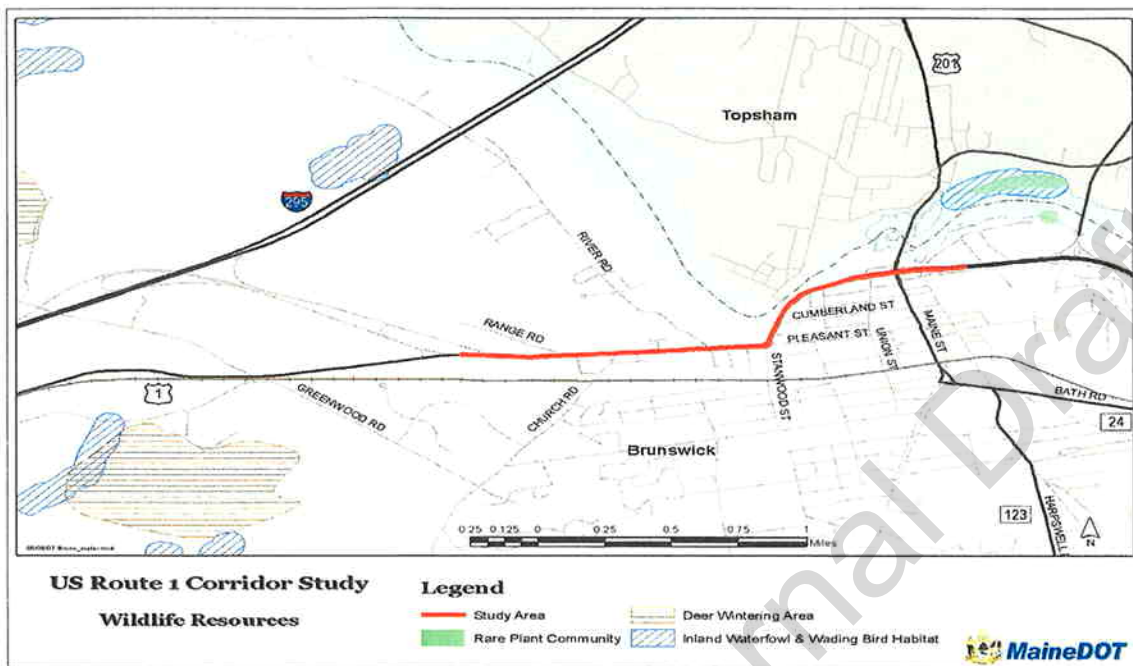
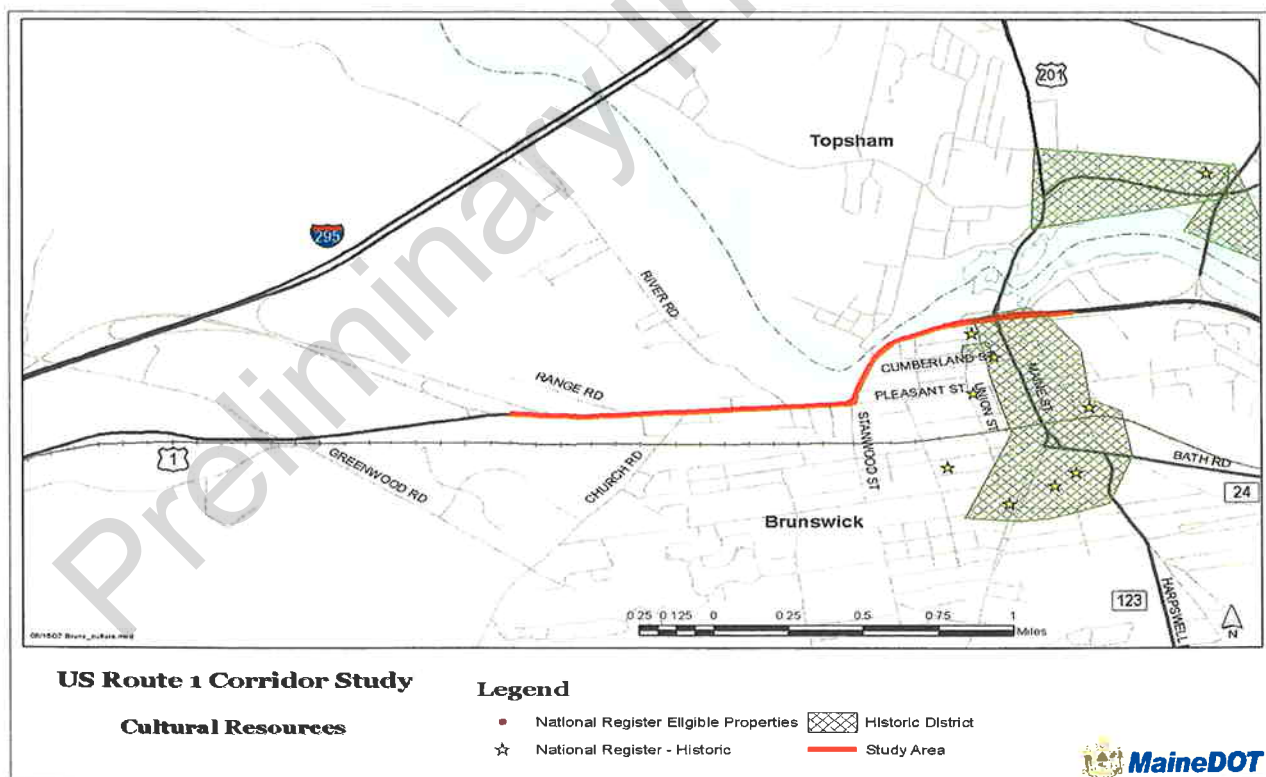


Figure 9. Cultural Resources



III. Future Conditions

A. Traffic Volumes

To evaluate the impact of future travel on the existing study area corridor, hourly traffic volume conditions were projected to the year 2027.

The procedure used was to estimate an annual percentage increase based on historical trends and apply that increase to all volumes within the study area. Pleasant St from the I-295 Connector Intersection with Route 1 to the Maine St. interchange in the east is expected to grow by about 1 percent per year.

The 2027 analysis assumes no major improvements of any type are implemented within the time period of the study other than those projects that are presently planned and/or programmed.

Figure 16 compares projected 2027 summer average daily traffic (SADT) along Route 1 with projected average annual daily traffic (AADT).

B. Mobility and Operating Analysis

The effects of projected year 2027 traffic volumes on intersection and roadway segment operating conditions were evaluated using the same analysis procedure described under existing conditions. The results of the 2027 level of service analysis are presented graphically in Figures 17 through 20 and are discussed in detail in the following sections.

Roadway

Traffic operating conditions along various segments of the study area roadways were evaluated based on anticipated future conditions. The future roadway segment LOS results for the specific segments within the study area are shown in Table 12.

Unsignalized Intersections

The results of the intersection analysis under 2027 design hour traffic volume conditions are summarized in Table 13 for many unsignalized intersections in the study area.

All of the unsignalized intersections will have one or more approaches operating at or over capacity based on 2027 design hour conditions.

2027 Estimated Average Daily Traffic Map

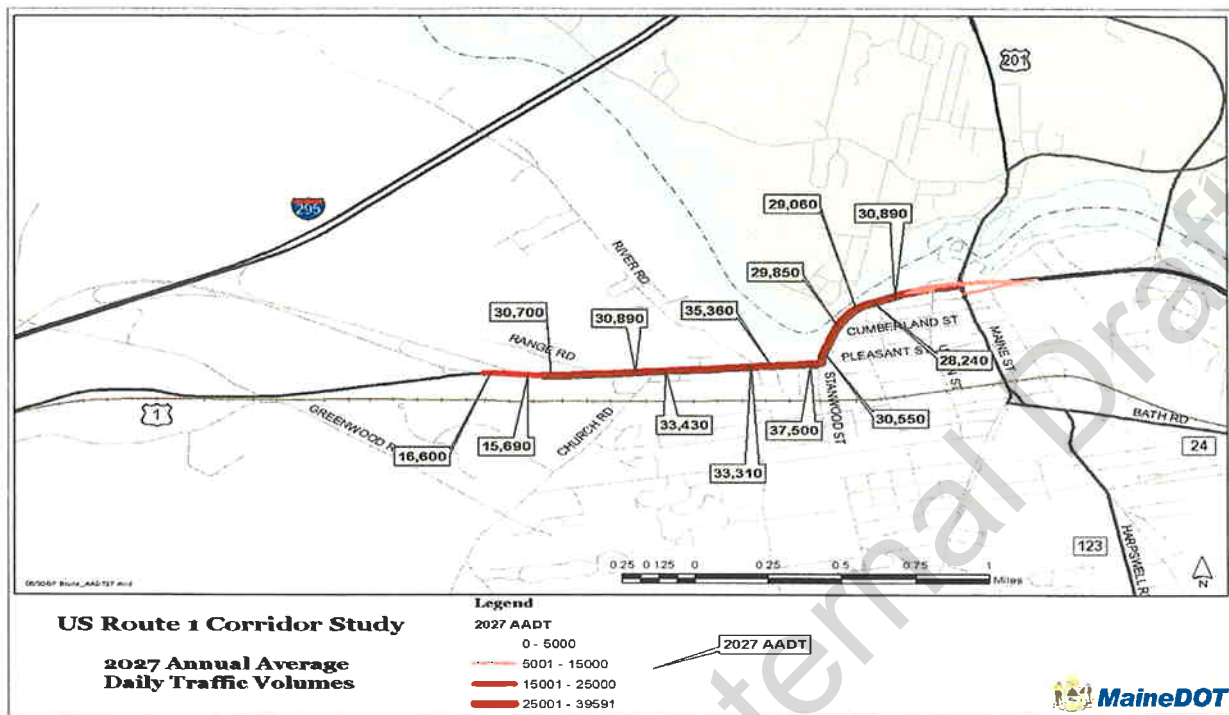


Table 12. LOS: Roadway Segments - Future Conditions (2027)

From	To	Section Mileage (miles)	Posted Speed (mph)	Avg. Travel Speed NB (mph)	LOS NB	Avg. Travel Speed SB (mph)	LOS SB
Rt 1 Divider (CUL Sign)	Range Road	0.228	35	5	F	41	A
Range Road	Church Road	0.212	35	4	F	31	B
Church Road	McDonalds Ent	0.069	35	6	F	10	F
McDonalds Ent	Amatos Ent	0.031	35	6	F	23	C
Amatos Ent	River Rd	0.250	35	4	F	28	B
River Road	Mill & Stanwood	0.220	35	8	F	12	F
Mill & Stanwood	Sage St	0.050	35	17	D	7	F
Sage St	Cumberland St	0.058	35	21	D	10	F
Cumberland St	Mill Rd	0.104	35	15	E	11	F
Mill Rd.	Cushing St	0.153	35	28	B	13	E
Cushing St	Off/ON Ramp Overhead sign	0.130	35	27	C	13	E
	Total Miles	1.505					

Table 13. LOS: Unsignalized Intersections - Future Conditions (2027)

	Minor Street				Major Street (Left)				
Intersection	EB		WB		SB		NB		
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Overall Delay
Rt 1 and Range Rd*	58.7	F	-	-	-	-	>100	F	70.0
Rt 1 and McDonalds*	>100	F	-	-	-	-	73.4	F	25.1
Rt 1 and Amatos*	>100	F	-	-	-	-	4.5	A	12.6
Rt 1 and Sage St.	-	-	2.5	A	-	-	-	-	9.9
Rt 1 and Cumberland St	-	-	>100	F	15.7	C	-	-	49.1
Rt 1 and Mill Rd	>100	F	-	-	-	-	>100	F	38.1
Rt 1 and Cushing St**	-	-	>100	F	37.9	D	-	-	67.4
Maine St and Mason St	-	-	>100	F	65.1	F	-	-	>100
Rt 1 NB off ramp and Maine St	>100	F	-	-	-	-	-	-	21.8
Rt 1 SB on ramp and Maine St	-	-	-	-	-	-	56.7	F	12.3
Rt 1 SB off ramp and Maine St	-	-	55	F	-	-	-	-	14.4
Maine St and Cabot St	>100	F	-	-	-	-	10.5	B	96

* EB represents Range Rd

** WB represents Cushing St.

Signalized Intersections

Levels of service analyses were conducted at three signalized intersections within the study area. The results of the intersection analysis under 2027 design hour traffic volume conditions are summarized in Table 14.

The table shows that each of the intersections that will operate at or less than acceptable operating conditions during the 2027 design hour conditions. Also, one of the intersections has either one or two approaches that fall below acceptable operating conditions.

Table 14. LOS: Signalized Intersections - Future Conditions (2027)

Intersection	EB		WB		SB		NB		Overall	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Route 1 and Church St	18.2	B	52.3	D	-	-	36.1	D	33.4	C
Route 1 and River Rd	27.2	C	1.4	B	49.9	D	37.3	D	25.1	C
Route 1 and Stanwood Ave	87.8	F	-	-	79.7	E	>100	F	>100	F

IV. Alternatives Analysis for Pleasant St.

This section presents the transportation improvement recommendations for the Study Area. The recommendations are divided into seven different alternatives. The overall purpose of these measures is to promote safe and efficient movement of traffic. Graphical representations of each alternative can be found in [Appendix X](#)

A. Alternatives

A0. No Build

Alternative 0 is an option based on leaving the corridor as-is with no improvements. Please refer to Section III Future Conditions for a discussion of ramifications of Alternative 0.

A1. Bi-directional

Alternative 1 reconfigures Pleasant St between Stanwood Ave and Cushing St to a bidirectional section of road. The concept behind this is to relocate traffic that enters onto Route 1 from Cumberland St and Cushing St to using Pleasant St and a signal. This proposal addresses safety issues at the intersections of Route 1 with Cumberland and Cushing as well as some of the congestion issues with both these intersections.

A2. Additional Lane

Alternative 2 relieves congestion along Route 1 by constructing an additional Northbound lane on Mill St from the intersection of Route 1 and Stanwood Ave to the Route 1 Off Ramp to Maine St. Safety hazards will be slightly reduced and traffic will flow more smoothly.

A3. Pockets

Alternative 3 constructs left hand turn pockets along the length of Route 1 both Northbound and Southbound from the Compact Urban Line to Stanwood Ave. This particular scenario also has a additional northbound lane on Mill St. The intention of this proposal is to reduce the safety hazards and provide for more free flow traffic.

A4. Jug Handles

Alternative 4 proposes construction of a median to separate Northbound and Southbound lanes of Route 1, thereby eliminating left turns into and out of businesses. Jug Handles would be constructed at various locations to allow vehicles to reverse direction in a timely fashion. This alternative proposal reduces the safety hazard along this section of Route 1. However it does not address the congestion issues.

A5. Parkway

Alternative 5 proposes construction of a bypass to the north of the existing Route 1 footprint. The parkway would touch down north of the Route 1 / Route 95 Off Ramp merge location, and South of the Mill St railroad overpass. This alternative addresses congestion on the existing Route 1 location which may also reduce some of the safety hazards present along Pleasant St.

A6. Diamond

Alternative 6 creates a bypass / interchange at the corner of Mill St and Stanwood Drive. Congestion is relieved by the construction of this alternative. Safety issues are not addressed with this alternative.

Our research has shown that each alternative results in either safety or mobility relief but does not address both at the same time to a large degree. Combinations of various alternatives have shown very promising results for answering both safety and mobility concerns.

To evaluate the impact of future travel on the proposed alternatives in the study area corridor, hourly traffic volume conditions were projected to the year 2027.

The procedure used was to estimate an annual percentage increase based on historical trends and apply that increase to all volumes within the study area. Pleasant St from the I-295 Connector Intersection with Route 1 to the Maine St. interchange in the east is expected to grow by about 1 percent per year.

The 2027 analysis assumes each alternative was done as a single project and no alternatives were combined within the time period of the study other than those projects that are presently planned and/or programmed.

B. Mobility and Operating Analysis

The effects of projected year 2027 traffic volumes on intersection and roadway segment operating conditions were evaluated using the same analysis procedure described under existing conditions.

Roadway

Traffic operating conditions along various segments of the study area roadways were evaluated based on anticipated future conditions. The future roadway segment LOS results for the specific segments within the study area are shown in Table 15.

Table 15. LOS: Roadway Segments – Alternative Future Conditions (2027)

From	To	Section Mileage (miles)	Posted Speed (mph)	Design Category	Urban Street Class	Ave. Travel Speed NB (mph)	LOS NB	Ave. Travel Speed SB (mph)	LOS SB
	Rt 1 Divider (CUL Sign)		35						
Rt 1 Divider (CUL Sign)	Range Road	0.225	35	Do you want this for all the alternatives?					
Range Road	Church Road	0.210	35		---				
Church Road	River Road	0.350	35		---				
River Road	Mill & Stanwood	0.220	35		---				
Mill & Stanwood	Cumberland St	0.115	35						
Cumberland St	Cushing St	0.255	35						
Cushing St	Off/ON Ramp Overhead sign	0.130	35		---				
	Total Miles	1.505							

Unsignalized Intersections

The results of the intersection analysis under 2027 design hour traffic volume conditions are summarized in Table 16 for three unsignalized intersections in the study area.

All three of the unsignalized intersections will have one or more approaches operating at or over capacity based on 2027 design hour conditions.

2027 Estimated Average Daily Traffic Map

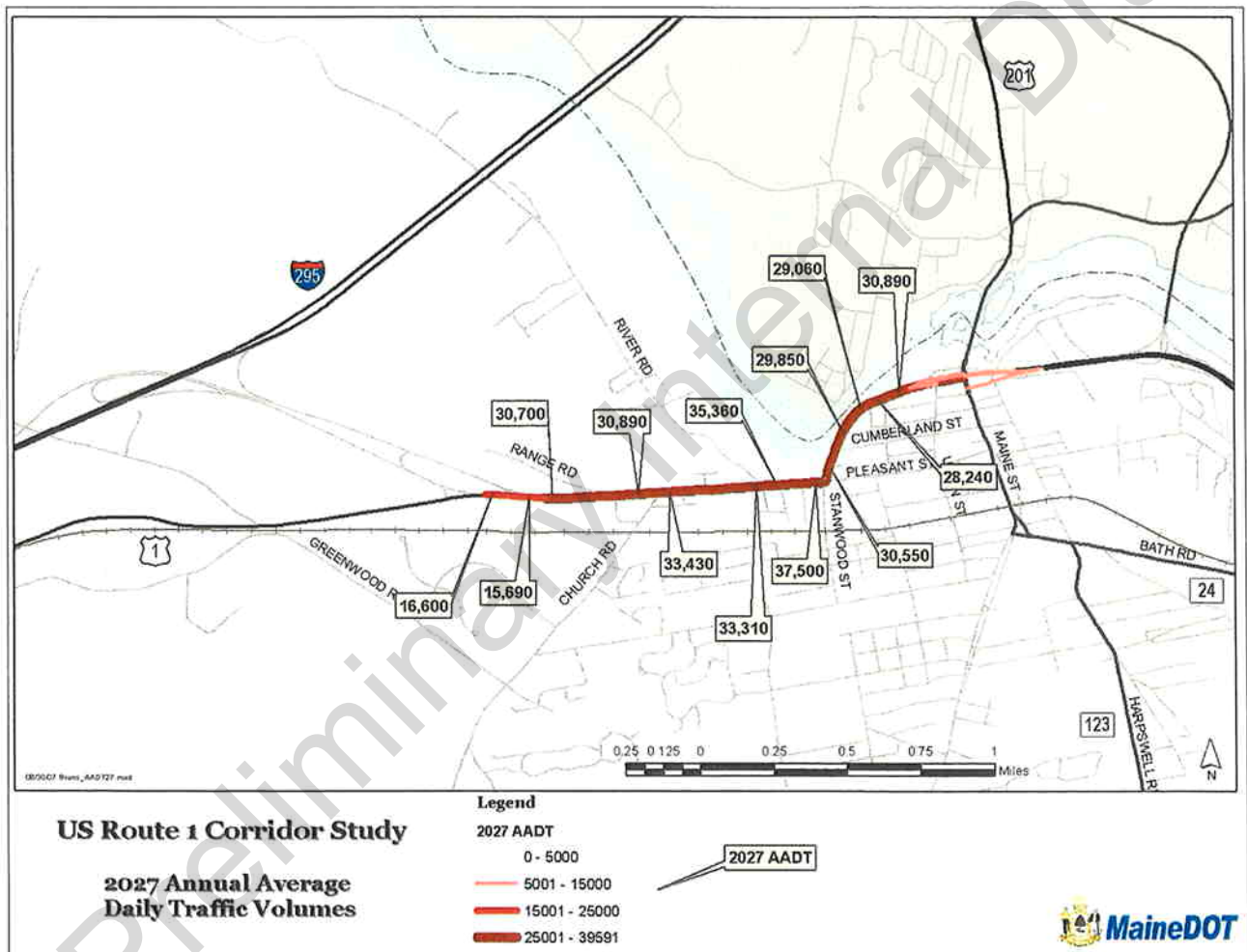


Table 16. LOS: Unsignalized Intersections – Alternative Future Conditions (2027)

	Minor Street				Major Street (Left)				
Intersection	EB		WB		SB		NB		
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Overall LOS
A0. No Build									
Rt 1 and Range Rd*	58.7	F	-	-	-	-	>100	F	70.0
Rt 1 and McDonalds*	>100	F	-	-	-	-	73.4	F	25.1
Rt 1 and Amatos*	>100	F	-	-	-	-	4.5	A	12.6
Rt 1 and Sage St.	-	-	2.5	A	-	-	-	-	9.9
Rt 1 and Cumberland St	-	-	>100	F	15.7	C	-	-	49.1
Rt 1 and Mill Rd	>100	F	-	-	-	-	>100	F	38.1
Rt 1 and Cushing St**	-	-	>100	F	37.9	D	-	-	67.4
A1. Bi-Directional									
Rt 1 and Range Rd*	>100	F	-	-	-	-	>100	F	50
Rt 1 and McDonalds*	>100	F	-	-	-	-	62.1	F	59.3
Rt 1 and Amatos*	>100	F	-	-	-	-	1.8	A	31.7
Rt 1 and Sage St.	-	-	>100	F	2.0	A	-	-	5.9
Rt 1 and Cumberland St	-	-	>100	F	19.4	C	-	-	21.9
Rt 1 and Mill Rd	>100	F	-	-	-	-	26.9	D	10.1
Rt 1 and Cushing St**	-	-	>100	F	16.1	C	-	-	29.8
A2. Additional Lane									
Rt 1 and Range Rd*	12.5	B	-	-	-	-	6.3	A	2.9
Rt 1 and McDonalds*	6.2	A	-	-	-	-	5.6	A	2.9
Rt 1 and Amatos*	3.4	A	-	-	-	-	3.1	A	1.3
Rt 1 and Sage St.	-	-	2.3	A	NA	NA	-	-	48.9
Rt 1 and Cumberland St	-	-	>100	F	3.6	A	-	-	67.6
Rt 1 and Mill Rd	>100	F	-	-	-	-	4.5	A	>100
Rt 1 and Cushing St**	-	-	>100	F	>100	F	-	-	>100

* EB represents Range Rd

** WB represents Cushing St.

Table 16. LOS: Unsignalized Intersections – Alternative Future Conditions (2027) –Cont.

	Minor Street				Major Street (Left)				
Intersection	EB		WB		SB		NB		
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Overall Delay
A3. Pockets									
Rt 1 and Range Rd*	21	C	-	-	-	-	13.2	B	5.5
Rt 1 and McDonalds*	9.1	A	-	-	-	-	17.9	C	2.3
Rt 1 and Amatos*	10.6	B	-	-	-	-	9.4	A	2.9
Rt 1 and Sage St.	-	-	9.2	A	NA	NA	-	-	1.0
Rt 1 and Cumberland St	-	-	2.6	A	12.4	B	-	-	3.2
Rt 1 and Mill Rd	30.4	D	-	-	-	-	35.6	E	4.4
Rt 1 and Cushing St**	-	-	>100	F	16.1	C	-	-	59.4
A4. Jug Handles									
Rt 1 and Range Rd*	6.4	A	-	-	-	-	NA	NA	12.4
Rt 1 and McDonalds*	62.2	F	-	-	-	-	NA	NA	11.0
Rt 1 and Amatos*	40.3	E	-	-	-	-	NA	NA	6.8
Rt 1 and Sage St.	-	-	NA	NA	11.4	B	-	-	3.4
Rt 1 and Cumberland St	-	-	>100	F	3.9	A	-	-	11.9
Rt 1 and Mill Rd	>100	F	-	-	-	-	>100	F	33.4
Rt 1 and Cushing St**	-	-	25.9	D	11.5	B	-	-	5.3
A5. Parkway									
Rt 1 and Range Rd*	3.9	A	-	-	-	-	0.5	A	1.6
Rt 1 and McDonalds*	6.6	A	-	-	-	-	24.8	D	8.8
Rt 1 and Amatos*	7.0	A	-	-	-	-	3.3	A	4.3
Parkway and Mill St	-	-	36.8	E	62.9	F	-	-	26.3
Rt 1 and Mill Rd	>100	F	-	-	-	-	36.0	E	17.8
Rt 1 and Cushing St**	-	-	>100	F	41.9	E	-	-	72.4
Rt 1 and Sage St.	-	-	NA	NA	NA	NA	-	-	24.2
A6. Diamond									
Rt 1 and Range Rd*	*	*	-	-	-	-	*	*	
Rt 1 and Cushing St**	-	-	*	*	*	*	-	-	

* EB represents Range Rd

** WB represents Cushing St.

Table 16. LOS: Unsignalized Intersections – Alternative Future Conditions (2027) –Cont.

	Minor Street				Major Street (Left)				
Intersection	EB		WB		SB		NB		
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Overall LOS
A6. Diamond									
Rt 1 and Range Rd*	29.3	D	-	-	-	-	8.5	A	1.5
Rt 1 and McDonalds*	22.1	C	-	-	-	-	14.5	B	2.8
Rt 1 and Amatos*	19.7	C	-	-	-	-	10.2	B	1.4
Rt 1 and Sage St.	The intersection no longer exists in this alternative.								
Rt 1 and Cumberland St	The intersection no longer exists in this alternative.								
Rt 1 and Mill Rd	>100	F	-	-	-	-	27.2	D	9.5
Rt 1 and Cushing St**	-	-	>100	F	29.7	D	-	-	54.2
Pleasant and Stanwood	65.9	F	-	-	8.4	A	39.4	E	49.4

* EB represents Range Rd

** WB represents Cushing St.

Signalized Intersections

Levels of service analyses were conducted at three signalized intersections within the study area. The results of the intersection analysis under 2027 design hour traffic volume conditions are summarized in Table 17.

The table shows that all but one of the alternatives has intersections that will operate at or less than acceptable operating conditions during the 2027 design hour conditions. Also, one of the intersections has either one or two approaches that fall below acceptable operating conditions.

Table 17. LOS: Signalized Intersections –Alternative Future Conditions (2027)

Intersection	EB		WB		SB		NB		Overall	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
A0. No Build										
Route 1 and Church St	18.2	B	52.3	D	-	-	36.1	D	33.4	C
Route 1 and River Rd	27.2	C	1.4	B	49.9	D	37.3	D	25.1	C
Route 1 and Stanwood Ave	-	-	>100	F	79.7	E	87.8	F	>100	F
A1. Bi-Directional										
Route 1 and Church St	-	-	>100	F	16.1	B	>100	F	>100	F
Route 1 and River Rd	>100	F	77.9	E	25.8	C	>100	F	>100	F
Route 1 and Stanwood Ave*	>100	F	>100	F	12.0	B	>100	F	>100	F
A2. Additional Lane										
Route 1 and Church St	-	-	28.4	C	10.0	A	40.9	D	33.0	C
Route 1 and River Rd	>100	F	28.9	C	40.4	D	19.3	B	33.8	C
Route 1 and Stanwood Ave	-	-	46.5	D	>100	F	75.7	F	79.5	F
A3. Pockets										
Route 1 and Church St	-	-	32.1	C	7.8	A	92.7	F	50.3	D
Route 1 and River Rd	58.6	E	25.8	C	21.4	C	34.1	C	30.1	C
Route 1 and Stanwood Ave	-	-	47.4	D	4.5	A	69.8	E	41.3	D
A4. Jug Handles										
Route 1 and Church St	>100	F	66.9	E	13.1	B	78.4	E	57.9	E
Route 1 and River Rd	>100	F	91.3	F	20	B	27.3	C	>100	F
Route 1 and Stanwood Ave	-	-	71.5	E	7.9	A	34.9	C	28.6	C
A5. Parkway										
Route 1 and Church St	-	-	21.0	C	12.8	B	20.6	C	19.0	B
Route 1 and River Rd	>100	F	51.4	D	13.0	B	>100	F	>100	F
Route 1 and Stanwood Ave	>100	F	-	-	22.6	C	>100	F	>100	F
A6. Diamond										
Route 1 and Church St	-	-	79.8	E	21.8	C	17.6	B	28.8	C
Route 1 and River Rd	>100	F	>100	F	10.2	B	41.2	D	72.9	E
Route 1 and Stanwood Ave	The intersection is no longer signalized in this alternative.									

* Route 1 is considered Northbound / Southbound

** Route 1 and Stanwood Ave for the Bi-Directional holds all directionality of the roads for this part of the analysis.

V. Alternatives Analysis for Route 24 / Route 1 Interchange

This section presents the transportation improvement recommendations for the Route 24 / Route 1 Interchange portion of the Study Area. The recommendations are divided into 2 different alternatives. The overall purpose of these measures is to promote safe and efficient movement of traffic. Graphical representations of each alternative can be found in Appendix X

A. Alternatives

PT-0. No Build

Alternative PT-0 is an option based on leaving the interchange as-is with no improvements. Please refer to Section III Future Conditions for a discussion of ramifications of Alternative 0.

PT-1. Southbound Left Turn

Alternative PT-1 reconfigures the Route 1 Southbound Off ramp to allow for left turns onto Route 24 (Maine St.). This proposal addresses congestion and safety issues regarding using Cushing Rd as a de facto Maine St access point.

To evaluate the impact of future travel on the proposed alternative in this portion of the study area corridor, hourly traffic volume conditions were projected to the year 2027.

The procedure used was to estimate an annual percentage increase based on historical trends and apply that increase to all volumes within the study area. The Route 24 / Route 1 Interchange portion of the Study Area is expected to grow by about 1 percent per year.

The 2027 analysis assumes each alternative was done as a single project and no alternatives were combined within the time period of the study other than those projects that are presently planned and/or programmed.

B. Mobility and Operating Analysis

The effects of projected year 2027 traffic volumes on intersection and roadway segment operating conditions were evaluated using the same analysis procedure described under existing conditions.

Roadway

Traffic operating conditions along this segment of the study area was evaluated based on anticipated future conditions. The estimated future roadway segment LOS results for the specific segments within this portion of the study area are shown in Table 18.

Table 18. LOS: Roadway Segments – Alternative Future Conditions (2027)

From	To	Section Mileage (miles)	Posted Speed (mph)	Ave. Travel Speed NB (mph)	LOS NB	Ave. Travel Speed SB (mph)	LOS SB	Unsignalized Intersections The results of the intersection analysis under 2027
	Mason St		35	28	B	8	F	
Mason St	Route 1 NB Off Ramp	0.225	35	28	B	8	F	
Route 1 NB Off Ramp	Route 1 SB On Ramp	0.210	35	7	F	9	F	
Route 1 SB On Ramp	Route 1 SB Off Ramp	0.350	35	30	B	28	B	
Route 1 SB Off Ramp	Town Line	0.220	35	28	B	28	B	

design hour traffic volume conditions are summarized in Table 19 for the unsignalized intersections in the study area.

Table 19. LOS: Unsignalized Intersections – Alternative Future Conditions (2027)

	Minor Street				Major Street (Left)				
Intersection	EB		WB		SB		NB		
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Overall Delay
PT-0. No Build									
Maine St and Mason St	-	-	>100	F	65.1	F	-	-	>100
Rt 1 NB off ramp and Maine St	>100	F	-	-	-	-	-	-	21.8
Rt 1 SB on ramp and Maine St	-	-	-	-	-	-	56.7	F	12.3
Rt 1 SB off ramp and Maine St	-	-	55	F	-	-	-	-	14.4
Maine St and Cabot St	>100	F	-	-	-	-	10.5	B	96
Pt-1. SB Left Turn									
Maine St and Mason St	-	-					-	-	
Rt 1 NB off ramp and Maine St	7.4	A	-	-	-	-	-	-	2.2
Rt 1 SB off ramp and Maine St	-	-	13.7	B	-	-	-	-	3.0
Maine St and Cabot St	40.2	D	-	-	-	-	9.0	A	4.3

Signalized Intersections

A level of service (LOS) analysis was conducted at a proposed signalized intersection within the study area. The results of the intersection analysis under 2027 design hour traffic volume conditions is summarized in Table 20.

The table shows that the intersection that will operate at or less than acceptable operating conditions during the 2027 design hour conditions.

Table 20. LOS: Signalized Intersections –Alternative Future Conditions (2027)

Intersection	EB		WB		SB		NB		Overall	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Pt-1. Southbound Left Turn										
Rt 1 SB off ramp and Maine St	-	-	>100	F	9.9	A	4.1	A	35.2	D

VI. Concluding Statements

A. Pleasant St.

After thorough review of the analyzed alternatives, it has been determined that no single alternative will address the safety and mobility concerns for Route 1 / Pleasant St and Mill St. corridor. Additional scenarios using merged alternatives were generated based on solving both the safety and mobility concerns and taking feasibility into account.

Safety of the traveling public is crucial to the determination of the final alternative. Portions of Route 1 in Brunswick contain some of the highest crash locations in the state. The analysis of the alternatives concludes that reducing or removing left hand turn movements along Pleasant St is tantamount to providing a safe corridor for the traveling and shopping public. Therefore, the final proposed alternatives should contain either Alternative A3 (an additional lane constructed to allow for the creation of a bi-directional center lane or turn pockets) or Alternative A4 (a narrow median placed down the centerline of Route 1 with openings to each public street for left turns on to those streets only). Both Alternative A3 and Alternative A4 necessitate the construct of jug-handles to allow for directional change. The jug-handles may be using existing roads or may need to be constructed.

Considering the necessity to purchase additional frontage from businesses to create an additional lane for Alternative A3, the Department has determined that Alternative 4 is the most feasible and cost effective choice to address safety concerns at this time.

Regarding mobility and capacity issues, the Department concludes that the Alternative A2 (adding a second Northbound lane to Mill St.) will address the issues significantly. In addition to this, however, when the Route 24 / Route 1 Interchange is taken into account, the Department concludes that a second Southbound lane may also be necessary to facilitate increased mobility and capacity.

The additional Northbound lane may also require the construction of an additional Northbound left turn on Pleasant St at the intersection with Stanwood Ave. as the key is to mobility and capacity is an optimally functioning intersection and signal.

Alternative A6 addresses both safety and mobility/capacity concerns at the Stanwood intersection. The creation of an interchange or “intersection bypass” provides a more fluid traffic pattern for the Route 1 traveling public with less signals. This alternative pulls through traffic away from a congested signal and difficult and dangerous intersection.

Each of the mobility based alternative could incur additional safety concerns along the Mill St corridor due to left hand turns onto the side roads. To address these new concerns it has been suggested that access to Route 1 be discontinued. To met the public needs for mobility, the Department proposes a new connector be constructed between and Dunning St and Cumberland Rd, that a right turn only intersection be created at the Cushing St. / Route 1 intersection and that the section of Pleasant St between Stanwood Ave and Cushing St be converted back to bi-directional traffic.

B. Route 24 / Route 1 Interchange

The Department concludes that the creation of a Southbound left turn lane from Route 1 to Route 24 is feasible and may address mobility and safety concerns for the intersection. However, the analysis indicates that the ramifications for doing so may be counter-balanced by the construction of an additional Southbound lane along Mill St. This new lane will increase the mobility of traffic encountering a signal a new signal (one re-activated) on Route 24 with a need to turn onto the Route 1 Southbound On-Ramp.

C. Final Conclusions

In conclusion, the Department has determined that there exists no single answer to the traffic concerns along the Route 1 (Pleasant St / Mill St.) corridor and that a combination of strategies must be used to sufficiently create a safer and seemingly less congested traffic situation. Any changes done to either the Route 1 corridor or the Route 24/ Route 1 Interchange will impact the other and an overall combination of the suggested alternatives is necessary.